Chemicals and Petrochemicals Sector Profile
# Indian Chemicals and Petrochemicals Industry: Quick Facts

<table>
<thead>
<tr>
<th>Turnover of the industry in India</th>
<th>US$ 92 Bn</th>
<th>6th largest in the world by turnover</th>
<th>6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share in global output</td>
<td>2.2%</td>
<td>Share in Gross Value Added within national manufacturing sector</td>
<td>7.1%</td>
</tr>
<tr>
<td>7th largest importer of chemicals in the world</td>
<td>7th</td>
<td>17th largest exporter of chemicals in the world</td>
<td>17th</td>
</tr>
<tr>
<td>Cumulative FDI attracted by the sector*</td>
<td>US$ 14.4 Bn</td>
<td>8th highest cumulative FDI earning sector for India</td>
<td>8th</td>
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</tbody>
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Snapshot of Gujarat’s chemicals and petrochemicals industry

Gujarat accounts for 62% of India’s petrochemical production, 30% of other chemicals production & 40% of chemical exports (organic and inorganic)

- 50% share in exports of Inorganic Chemicals
- 39% share in exports of Organic Chemicals

World’s largest grassroots refinery in Jamnagar

India’s first operational Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR)

4 refining complexes with combined capacity of 102 MMTPA providing feedstock

Presence of more than 4,400 industrial units that manufacture chemicals and chemical products

6,500 chemicals & petrochemicals are being produced

Growth drivers for Gujarat’s chemicals and petrochemicals industry

Manufacturing sector contributing over 30% to State GDP. Strong manufacturing sector leads to continued high demand for chemicals, petrochemicals and intermediates.

Demand from the urban consumer: 43% of Gujarat’s population resides in urban areas, fueling demand for consumer chemicals, plastics, paints, cosmetics etc.

Six Smart Cities being developed in Gujarat will lead to increased demand for Construction Chemicals and Paints.

Booming automotive sector in Gujarat will give rise to future demand for Automotive Chemicals.

Presence of manufacturing units across the chemicals and petrochemicals value chain helps optimize supply chains and logistics costs.

Gujarat accounts for over 50% of India’s polymer production. Plastics industry generates demand for petrochemical derivatives.

Gujarat is a major producer of crops such as wheat, rice, groundnut, bajra, castor, cotton and mango which ensures continued demand for fertilizers and agro-chemicals.
Strong presence across the petrochemicals value chain

13% of India's Crude Oil production and 5% of Natural Gas production

~150 MMTPA crude oil import capacity

2 LNG regasification terminals with 15 MMTPA combined capacity

102 MMTPA refining capacity across 4 complexes

>1 MMTPA cracking capacity

Home to major petrochemical complexes

Clusters of derivatives, plastics and polymers manufacturing, spread across the State

Sources: Ministry of Petroleum and Natural Gas, Govt. of India; Gujarat Maritime Board; Deendayal Port Trust; Gujarat Industrial Development Corporation
Prominent chemicals and petrochemicals hubs and supporting infrastructure across the State

<table>
<thead>
<tr>
<th>Sno.</th>
<th>Detail</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Refining complex operated by Reliance Industries Ltd. (68 MMTPA)</td>
</tr>
<tr>
<td>2</td>
<td>Refining complex operated by Rosneft (20 MMTPA)</td>
</tr>
<tr>
<td>3</td>
<td>Refining complex operated by Indian Oil Corp. Ltd. (13 MMTPA)</td>
</tr>
<tr>
<td>4</td>
<td>PCPIR at Dahej</td>
</tr>
<tr>
<td>5</td>
<td>LNG terminal operated by Petronet LNG (10 MMTPA)</td>
</tr>
<tr>
<td>6</td>
<td>India's first dedicated Chemical Port at Dahej (2.5 MMTPA)</td>
</tr>
<tr>
<td>7</td>
<td>LNG terminal operated by Shell Hazira (5 MMTPA)</td>
</tr>
<tr>
<td>8</td>
<td>Chemicals and Petrochemicals Manufacturing Cluster: Vadodara, Ankleshwar, Bharuch, Dahej, Surat, Hazira</td>
</tr>
<tr>
<td>9</td>
<td>Chemicals and Plastics Manufacturing Cluster: Ahmedabad</td>
</tr>
<tr>
<td>10</td>
<td>Chemicals Manufacturing Cluster: Mithapur</td>
</tr>
<tr>
<td>11</td>
<td>Mundra Port</td>
</tr>
<tr>
<td>12</td>
<td>Sikka Oil Jetty (operated by Reliance Industries)</td>
</tr>
<tr>
<td>13</td>
<td>Vadinar Oil Terminal (operated by Kandla Port)</td>
</tr>
<tr>
<td>14</td>
<td>Upcoming Floating Storage and Regasification Unit (FSRU; floating LNG terminal) (5 MMTPA)</td>
</tr>
<tr>
<td>15</td>
<td>Upcoming LNG terminal at Mundra by GSPC (5 MMTPA)</td>
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</tbody>
</table>
Leading exporter of ‘Made in India’ products and intermediates across the value chain

<table>
<thead>
<tr>
<th>Industry</th>
<th>2016-17 Share</th>
<th>2016-17 Value (in $)</th>
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<tbody>
<tr>
<td>Petroleum Products</td>
<td>61%</td>
<td>$19.3 Bn</td>
</tr>
<tr>
<td>Inorganic Chemicals</td>
<td>50%</td>
<td>$363 Mn</td>
</tr>
<tr>
<td>Organic Chemicals</td>
<td>39%</td>
<td>$1.88 Bn</td>
</tr>
<tr>
<td>Dyes</td>
<td>71%</td>
<td>$1.4 Bn</td>
</tr>
<tr>
<td>Agro Chemicals</td>
<td>62%</td>
<td>$1.3 Bn</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>36%</td>
<td>$21 Mn</td>
</tr>
<tr>
<td>Cosmetics and Toiletries</td>
<td>35%</td>
<td>$500 Mn</td>
</tr>
</tbody>
</table>

*All data for 2016-17; Ministry of Commerce, Govt. of India*
Our chemicals, petrochemicals and intermediates serve markets around the world.

Gujarat’s major exports include: Petroleum Products, Organic Chemicals, Dyes and Agro Chemicals.
Incentives offered under policies of Government of Gujarat

**Assistance under Gujarat Industrial Policy, 2015**

- Financial assistance for industrial infrastructure
- Incentives for developing Industrial Parks
- Assistance to set up Logistics Parks
- Assistance to labor intensive industries
- Assistance for environment management
- Special Incentives for Mega/Innovative Projects

- Assistance schemes for MSMEs
  - Capital Investment Subsidy
  - Interest Subsidy
  - Venture Capital assistance
  - Assistance for quality certification and patent registration
  - Assistance for raising capital through SME Exchange
  - Market Development Assistance

**Assistance under General Incentive Scheme, 2016**

- Tax reimbursement based on quantum of investment and location of the project*

**Assistance to Plastics Industry**

- Interest Subsidy @ 7% per annum for interest payable on Term loans
- Tax reimbursement based on Fixed Capital Investment*

*Govt. of Gujarat has announced that tax incentives will continue to be given under GST regime; quantum of assistance to be decided
Partners in our progress
Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR)
Preferred investment destination for chemicals and petrochemicals sector

- Special delineated investment region of 453 sq. km. planned for the manufacturing of petroleum products, chemicals and petrochemicals
- World class 1.1 MMTPA multi-feed cracker - investment of $ 4.6 Billion (INR 30,000 Crore)
- Presence across the entire chemical value chain which enables cost competitive production

### Key information

<table>
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<tr>
<th>Category</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Investment Made &amp; Committed in Manufacturing</td>
<td>$ 27.4 Billion (INR 1,75,858 Crore)</td>
</tr>
<tr>
<td>Investment in units that have commenced production</td>
<td>$ 10.9 Billion (INR 69,869 Crore)</td>
</tr>
<tr>
<td>Investment in units that are under implementation</td>
<td>$ 16.5 Billion (INR 1,05,989 Crore)</td>
</tr>
<tr>
<td>Investment on Infrastructure Development</td>
<td>$ 2.5 Billion (INR 16,059 Crore)</td>
</tr>
</tbody>
</table>

Source: Gujarat Industrial Development Corporation
Investment by the Anchor Tenant

- ONGC Petro Additions Ltd. (OPaL), a JV of ONGC, GAIL and GSPC has developed a world scale 1.1 MMTPA multi-feed cracker in the PCPIR
- OPaL’s unit at PCPIR, is the largest petrochemical plant in India, developed at an investment of $ 4.6 Billion

The OPaL Cracker Unit was dedicated to the nation by Hon’ble Prime Minister Mr. Narendra Modi, in March 2017

Source: Gujarat Industrial Development Corporation

GAIL: Gas Authority of India Ltd.; GSPC: Gujarat State Petroleum Corporation
Advantage of the PCPIR

- Concentration of Petroleum, Chemical and Petrochemical estates around PCPIR
- Rich natural resources and feedstock
- Robust supporting infrastructure - road, rail, port, power, gas, water
- Chemical Port and Storage Facility at Dahej
- LNG regasification terminal at Dahej
- Efficient waste management - effluent disposal pipelines, solid waste disposal sites
- Quality Work Force, Peaceful Labour
Supporting infrastructure: Port Facilities

Existing Infrastructure
• Dahej Port: 11.7 MMTPA
• Liquid Chemical Terminal: 5 MMTPA
• LNG Terminal: 12.5 MMTPA
• Liquid fuel jetty: 2.12 MMTPA
• Bulk cargo jetty: 3.8 MMTPA

On-going development
• Gogha-Dahej Ro-Ro Ferry Service (distance between the two places reduced from 350 Km by road to 30 Km by sea)
• Jetty for handling Over Dimensional Cargo by Gujarat Maritime Board and Dahej SEZ Ltd.

Proposed future development
• 41 MMTPA port for Solid Cargo, Liquid Cargo and Container

Source: Gujarat Industrial Development Corporation
## Supporting infrastructure: Road, Rail & Air

### Existing Infrastructure

#### Road
- 50 km of six lane Dahej-Bharuch State Highway connecting six lane Delhi-Mumbai National Highway and National Expressway
- Internal roads in Dahej PCPIR

#### Airport
- 85 km from domestic airport at Surat
- 90 km from International airport at Vadodara
- 250 km from International airport at Ahmedabad

#### Rail
- Connected to Delhi–Mumbai Broad Gauge railway line at Bharuch
- Bharuch–Dahej rail line (62 km) for both goods and passengers

### Proposed development

#### Road
- Ahmedabad Vadodara National Expressway to be extended to Mumbai

#### Airport
- Greenfield airport for PCPIR
- Airstrip at Ankleshwar

#### Rail
- Delhi-Mumbai Dedicated Freight Corridor (DFC)
- Bharuch-Dahej broad gauge line to be connected to the DFC at Dayadra Jn.

Source: Gujarat Industrial Development Corporation
Supporting infrastructure: Power Supply

Existing Infrastructure

- Four 220 KV sub-stations located at Dahej, Dahej SEZ, Rahiyad-Suva and Vilayat
- Seven 66 KV substations located at Dahej, Luna, Bhensali, Vilayat
- Gujarat Energy Transmission Corporation Limited (GETCO) has completed construction of 220 KV substation at Suva Dahej, which is operational
- 1600 MW gas based power plant by Torrent Power Ltd. in Dahej SEZ has been completed.

Proposed development

- Two 220 KV, one 44 KV & nine 66 KV substations are planned in Dahej & Saykha area respectively within PCPIR

Source: Gujarat Industrial Development Corporation
Supporting infrastructure: Water, Effluent Disposal and Gas

**Existing Infrastructure**

**Water**
- GIDC supplies 25 MGD raw water drawn from Narmada river at Nandand Angareswar

**Effluent Disposal and Gas**

**Existing Infrastructure**
- 90 MLD disposal pipeline of 40 km within PCPIR to dispose the effluent into deep sea (4.5 Km inside the sea)

**Proposed development**
- Setting up of a CETP with capacity of 40 MLD by GIDC in Dahej
- 90 MLD disposal pipeline and 40 MLD CETP at Saykha
- All gas suppliers to extend network

Source: Gujarat Industrial Development Corporation
## GIDC Saykha Chemical Zone

Saykha Industrial Estate, developed by Gujarat Industrial Development Corporation is part of Gujarat PCPIR, and lies within the impact area of Delhi Mumbai Industrial Corporation.

<table>
<thead>
<tr>
<th>Location:</th>
<th>Electricity cost, excluding taxes ($/KWh): Approx. 0.107</th>
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<tbody>
<tr>
<td>Within PCPIR - Bharuch District (Non-SEZ area)</td>
<td></td>
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<tr>
<td>Total Area: 1,01,339 m²</td>
<td>Water availability: 50 MGD</td>
</tr>
<tr>
<td>Land Price: $25/m²</td>
<td>Water cost, excluding taxes ($/m³): Approx. 0.445</td>
</tr>
<tr>
<td>Closest ports:</td>
<td>LNG available in region (SCM)/day): 31.92 MMTPA</td>
</tr>
<tr>
<td>Dahej – within PCPIR</td>
<td>LNG cost, excluding taxes ($/SCM)): Approx. 0.385</td>
</tr>
<tr>
<td>Hazira – 135 kms</td>
<td></td>
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<tr>
<td>Railway Station:</td>
<td></td>
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<tr>
<td>Bharuch -12 kms</td>
<td></td>
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</tbody>
</table>

KWh: Kilowatt hour; MGD: Million Gallons per Day; SCM: Standard Cubic Meter; GIDC
Saykha industrial estate plan

Source: Gujarat Industrial Development Corporation
Investment opportunities in Gujarat’s chemicals and petrochemicals industry

Manufacturing of **Specialty Chemicals**: Textile Chemicals, Construction Chemicals, Automotive Chemicals which are expected to be in high demand going forward

Development of dedicated **Chemicals Logistics Park** at PCPIR Dahej: Encompassing Container Freight Station (CFS), rail and road connectivity to port facilities; warehousing facilities

Manufacturing of feedstock for polymer industry: **Ethylene and Propylene** to reduce import dependence and lower costs for domestic polymer manufacturing

Manufacturing of chemicals such as **Aniline, Acrylic Acid, Methyl Diphenyl Di-isocynate (MDI)**, **Phenol and Acetone**

Development of **Tank Farms** at Dahej PCPIR for storage of POL (Petroleum Oil and Liquids)
Thank you

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